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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,488	05/30/2001	Young Joo Yee	2080-3-20	8736

35884 7590 07/08/2004

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EXAMINER

AGUSTIN, PETER VINCENT

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/871,488

Applicant(s)

YEE, YOUNG JOO

Examiner

Peter Vincent Agustin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 7-10, 12-16 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-10, 12-16 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 19 & 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 recites the limitation "the opening"; and claim 20 recites the limitations "the opening" and "the second supporting frame". There is insufficient antecedent basis for these limitations in the claims.

3. The following is a quotation of the fourth paragraph of 35 U.S.C. 112:

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

4. Claims 19 & 20 are rejected under 35 U.S.C. 112, fourth paragraph because the limitation "the opening" fails to further limit the subject matter of a previous claim. Thus, the claims will not be treated on the merits.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 7-9, 12-15 & 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasono (US 6,226,238) in view of Mitsumori et al. (hereafter Mitsumori) (US 5,005,162).

In regard to claim 7, Kasono discloses an optical pickup head (figure 2) which makes a fine movement by a driver (21), and focuses an incident laser beam to a recording medium (5) for recording/reproducing a data, the optical pickup head comprising: a focusing lens (9) for primary focusing of the laser beam; an SIL (Solid Immersion Lens) (10) under the focusing lens for secondary focusing of the laser beam focused primarily; and, a supporting frame (11) for integrating the focusing lens and the SIL (Solid Immersion Lens). Additionally, in regard to claim 13, Kasono discloses an air-bearing surface (figure 2, space formed between elements 5 & 14) formed under the supporting frame for making the supporting frame buoyant (see also column 3, line 57 thru column 4, line 4). However, in regard to claims 7 & 13, Kasono does not disclose a micro mirror having at least one approximately 45° mirror surface for reflecting the incident laser beam perpendicular to an incident direction.

Mitsumori discloses a micro mirror (figure 4, element 45) having a 45° mirror surface for reflecting an incident laser beam perpendicular to an incident direction. The mirror is mounted on a supporting frame (22), which also supports a focusing lens (11). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have added the micro mirror of Mitsumori to the optical pickup head of Kasono in order to make the optical axis of the focusing lens substantially perpendicular to the reference plane (column 7, line 62 thru column 8, line 2), and to have arranged the micro mirror to be mounted in a common supporting frame as the focusing lens and the SIL, the motivation being to reduce the size and thickness of the optical head (column 11, lines 36-49).

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In regard to claims 8 & 14, Mitsumori and hence the obvious combination noted above, discloses that 45° mirror surface of the micro mirror has a highly reflective metal coating applied thereto (column 7, lines 57-61).

In regard to claims 9 & 15, Mitsumori and hence the obvious combination noted above, discloses that the micro mirror is formed of a silicon substrate (column 7, lines 57-61).

In regard to claims 12 & 18, Kasono discloses that a focus plane of the focusing lens and a focus plane of the SIL are aligned in parallel (as shown in figure 2); and Mitsumori and hence the obvious combination noted above, discloses that the 45° mirror surface of the micro-mirror and a focus plane of the focusing lens are aligned in parallel (as shown in figure 4).

7. Claims 10 & 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Kasono & Mitsumori as applied to claims 9 & 15 above, and further in view of Ohashi et al. (hereafter Ohashi) (US 6,487,224).

For a description of Kasono & Mitsumori, see the rejection above. However, Kasono & Mitsumori are silent to whether the silicon substrate is a 9.74° off-axis (100) silicon wafer.

Ohashi discloses a 9.74° off-axis (100) silicon wafer manufactured into a 45° mirror (column 1, lines 42-56) is known. It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have manufactured the silicon substrate of Kasono & Mitsumori using the 9.74° off-axis (100) silicon wafer as suggested by Ohashi, the motivation being to obtain a mirror having 45° with respect to the surface of the substrate from a conventional silicon surface having a 54.74° angle with respect to the surface, thereby directing the laser beam to the perpendicular direction (column 1, lines 52-54). Applicant should note that the mirror surface of a conventional silicon substrate is known in the art to have an angle of

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54.74°. The 9.74° off angle is used to compensate for the 54.74° angle to obtain a 45° mirror surface, i.e.,  $54.74 - 9.74 = 45$ .

### *Response to Arguments*

8. Regarding claims 10 & 16, the applicant argues that Ohashi is an improperly cited reference because Ohashi teaches away from constructing the silicon substrate such that it has a 9.74° off-axis silicon wafer. The examiner disagrees. Although Ohashi does not teach this limitation in the description of the embodiments, Ohashi still provided in the background a clear motivation for using this limitation by making reference to prior art, as explained in the previous (and present) Office Action. The examiner could have used a similar reference that teaches using a 9.74° off-axis silicon wafer for a silicon substrate, and the motivation for doing so would have been the same.

### *Conclusion*

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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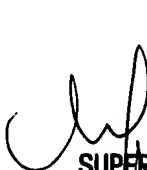
however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Vincent Agustin whose telephone number is (703) 305-8980. The examiner can normally be reached on Monday thru Friday 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PVA  
06/22/2004

  
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6/27/04